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Although much has been learned about good web design principles since academic library websites became commonplace, the changing landscape of the web makes it is necessary to periodically test the usability of library websites to assess how effectively they provide services and information to users. Moreover, with users accessing library services remotely via the web more than ever before, the importance of library websites has increased proportionally. This is especially true for music library websites, as users increasingly access scores and recordings through music libraries' websites. This paper describes a task-based usability test designed to gather both quantitative and qualitative data about a university music library website. The study was successful in identifying areas where the website could be improved and generating recommendations to make these changes.

Headings:

World Wide Web

Web sites – Evaluation

User-interfaces – testing

Academic Libraries

# THE STATE OF ACADEMIC MUSIC LIBRARY: A USABILITY STUDY

by
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Robert Capra

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## Introduction

In the fall of 2011the Duke University East Campus Libraries Web Assessment Group was formed (ECL WAG) to assess the use and performance of the Lilly Library and the Music Library websites. Among the initiatives approved by ECL WAG was a task-based usability test. After analyzing usage of the sites using Google analytics and completing an environmental scan of comparable institutions' library websites and a literature review, members of ECL WAG determined what the core functions of each site were and completed a cognitive walkthrough of these tasks. Through this process, the committee identified potential points of failure in the ability of the system to aid in the completion of the tasks deemed to be essential to the sites' intended function. The committee also appointed the author of this paper to design and implement the testing of the Music Library site. Thus, this paper presents the findings of the task-based usability testing of the Duke University Music Library. The data presented here will be used to redesign the site and will hopefully contribute to the understanding of the current state and usage of library websites and music library websites.

## Literature Review

For Nielson (2010), the term usability refers to the level of ease with which users perform tasks with. Nielson (2001) identifies four basic usability measures. These are:

- success rate (whether users can perform the task at all)
- the time a task requires
- the error rate
- users' subjective satisfaction

Recognizing that there are other important qualities, Nielson (2010) cites utility as an attribute that is equally as important as usability. Utility refers to whether or not something provides the functions that one needs. If something is to be useful, it must be have both qualities: utility and usability.

Cockrell & Jayne (2002), employing user-centered design, examined the ability of undergraduate students to find scholarly articles on their library's website and noted that students often searched the libraries online catalog to find such information. In interpreting user behavior and assessing the Western Michigan University Library's website, Cockrell & Jayne (2002) point out that the organization of materials and information in digital environments is of the utmost importance. That is, the categorization, labeling, presentation, and prominence—i.e., information architecture—of content are key factors in creating effective, usable systems. The authors, drawing on the work of Battleson, Booth, Weintrop, and Nielson (2010) point out the merits of user-centered design's emphasis on users' ability to perform specific tasks rather than attempting to discover what *ought to* work. Cockrell & Jayne (2002) also point out that usability is often is also affected by users' understanding—or lack of understanding—of terminology. The authors argued that terms need to be defined. For example, terms such

as “serials”, “periodicals”, and “ILL” need to be clearly defined. Such definitions are essential for users to understand how these resources are categorized.

Blandford et al. (2004) also point to the need to use terminology that is easily understandable. Moreover, Blandford et al. (2004) cite Kuhlthau in emphasizing the importance of qualitative factors in assessing usability. Blandford et al. (2004) argue that Kuhlthau’s six stages of the information-seeking process (ISP) apply to digital environments as well as physical libraries. The authors argue that researchers need to augment empirical data with qualitative data and an understanding of the affective motivations behind user behavior. In their study, Blandford et al. (2004) compare four different evaluative techniques. The first of these techniques is *heuristic evaluation* (HE)—as developed by Nielson (Blandford et al. 2004). While Blandford et al.(2004), found HE to be useful for addressing the types of concerns we have been discussing such as the use of ambiguous terminology and nebulous categorization of information, the authors argued that HE was not an effective method for establishing an understanding of users’ motivations and underlying, affective responses.

The next technique explored by Blandford et al. (2004) is *Cognitive Walkthrough* (CW). CW also a user-centered, task specific approach that prompts users to answer specific questions as they attempt to complete each task. The authors concluded that CW is also useful for assessing “surface features” but fails to account for the cognitive and affective factors of query formation and interaction with content. *Claims Analysis* (CA) is similar to CW in that it presents users with scenarios (cf. tasks) designed to give users insight into the overall design of web interfaces. Blandford et al. (2004) found that CA

was valuable as a tool for assessing usability both quantitatively and qualitatively. *Concept-based Analysis of Surface and Structural Misfits* (CASSM), the fourth method discussed by Blandford et al. (2004) was found to be useful for analyzing how well web interfaces correspond to users' experience in physical environments. In summary, the authors found that HE and CW are useful for assessing the effectiveness of surface features of design such as categories and use of terminology, and CA and CASSM may be useful for gathering insights into the underlying structures of user concepts vis-à-vis site organization and the overall design and layout of web interfaces.

Dougan & Fulton (2009), who like Cockrell & Jayne (2002), sought to obtain qualitative data by encouraging users to verbally express their thoughts as they completed tasks also found that terminology, such as the use of acronyms in database titles, served to impede ease of use. Moreover, Dougan & Fulton (2009) also found that the terminology used can often inhibit users'ability to find information. Thus, the authors posited that it may be helpful to provide definitions of terms used on the site. Additionally, Dougan & Fulton (2009) cite text-heavy pages and unnecessarily complex navigation schemes as obstacles to efficient navigation. For Dougan & Fulton (2009), well-designed categories are of utmost importance in designing usable interfaces. The authors found that users do not mind having to click more times if content is organized into clear categories.

Wu (2000), like Cockrell & Jayne (2002) and Dougan & Fulton (2009), used software to record participants using a "think aloud" protocol. Twenty users were asked to complete nineteen tasks using the main Duke University Libraries website. The study

focused on heavily travelled sections of the site that received heavy traffic and that had design features that were similar to other pages on the site.

In the Wu study (2000), twenty users were given nineteen tasks; of the nineteen tasks, users completed an average of 16.1 tasks. Tasks involving use of the online catalog, research guides, internet resources, and the Biology Library Website were the most problematic. In the case of the resource guides, Wu (2000) concluded that that their substantial use and overall importance indicated that they should be featured more prominently. Wu's (2000) conclusion that tasks involving the online catalog would have been improved if users had bothered to avail themselves of the instructions provided echoes Cockrell & Jayne's (2002) and Dougan & Fulton's (2009) call for the inclusion of instructional materials and definitions of terminology. Yet, the fact that users were, in fact, provided with instructions and failed to use them begs the question: if instructions and terminology are provided, will users actually take the time to read them? Wu's (2000) finding that the manner in which resources are categorized also resonates with Dougan & Fulton (2009). Another theme consistent with Dougan & Fulton (2009) was that a surfeit of text inhibited users' ability to find pertinent information.

Blandford & Green (1997) explored Ontological Sketch Modeling (OSM) as a means of evaluating the usability of the New Zealand Digital Library Music Library (NZDL ML). Using the core concepts of OSM, namely, *entities, actions, attributes, and relationships*, the authors sought to identify *misfits* in website design and the conceptual categories in the minds of users. OSM may be particularly pertinent for pinpointing usability issues related to categorization.

Questions were composed to determine how well users' concepts matched the organization of information on the NZDL ML. The study was able to identify several misfits. One misfit was found in the categorization of melodies on the site that did not necessarily correspond to users' categorizations. Other misfits were identified in mismatches of file types of retrieved melodies and the available software available for playback on users' personal computers. Another misfit, which corresponded to the findings of Dougan & Fulton (2009) and Cockrell & Jayne (2002) was the use of undefined terms such as "pitch", "method", and "tuning" which were interpreted differently, even by sophisticated users. The authors concluded than OSM was more useful than heuristic evaluation for identifying high-level concepts relevant to usability rather than the "details of user-system interaction". Like the other studies discussed above, the authors recommended clearly defining terms and categories.

## Methodology

With an eye toward assessing how effectively and efficiently users outside of the Duke University Department of Music were able to navigate the Duke University Music Library's homepage, participants were recruited at the Bryan University Center and asked to perform seven tasks. A total of nine subjects took part in the study: seven undergraduates outside of the Music Department, one undergraduate music major, and one graduate student. All participants had never used the site.

Subjects completed the study in approximately fifteen minutes and were offered a package of small candy bars as compensation for their involvement. Users were asked to

complete a set of seven tasks selected based on a cognitive walkthrough of the homepage. In the cognitive walkthrough these tasks were deemed as central functions of the page. Users were asked to:

1) navigate to the Music Library homepage from the main Duke University Libraries homepage

2) identify whom to contact for questions regarding fines

3) locate the loan periods for compact discs

4) find the hours of the Music Library

5) navigate to an online database of classical music recordings

6) navigate to an online database of music reference materials, and

7) access the online catalog.

After completing each task, subjects were asked to (verbally) to either strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree with the following two statements:

1) This information was easy to find and

2) This information was in a place you expected.

Upon completing all of the tasks participants responded verbally to a series of closing questions:

1) Now that you've had a chance to look at the webpages, what's not on the page that you would expect to be here?

2) What are the 2 or 3 most useful things on the site? In general, what do you like about the site?

3) Is there anything about our site that you find confusing and/or difficult?

4) Do the headings and groupings of information make sense to you? If not, how would you change them?

5) Are there kinds of information/features that you don't see on our site now that you would like to see in the future?

**Evaluation Measures**

The following measures were used to assess how efficiently subjects were able to complete each task. The data were gathered using Morae software.

Time-on-task: The amount of time users spent on each task.

Success rate: Whether or not the task was completed or not.

Error rate: Errors are defined as deviations from optimal navigation paths. There may be more than one optimal navigation path for a given task. For example, in locating the hours of the Music Library, there are two optimal paths. One could click on "Hours" under "About Us" or locate the hours in the sidebar on the left-hand side of the page. For the purposes of this study, however, using the search box, rather than using links on the homepage was defined as an error.

Users' subjective satisfaction: This was measured by users' level of agreement with the statements read to them after each task: 1) This information was easy to find 2) This information was in a place I expected.

Mouse Clicks: The number of times users clicked the mouse for each task.

Mouse Movement: The number of pixels the mouse moved over while completing a task.

Comments, responses, and observations: User comments and responses were gathered from recordings as they thought "out loud" while completing tasks and from their responses to direct questions. Observations are insights noted by facilitator or recorded by video/audio recordings.

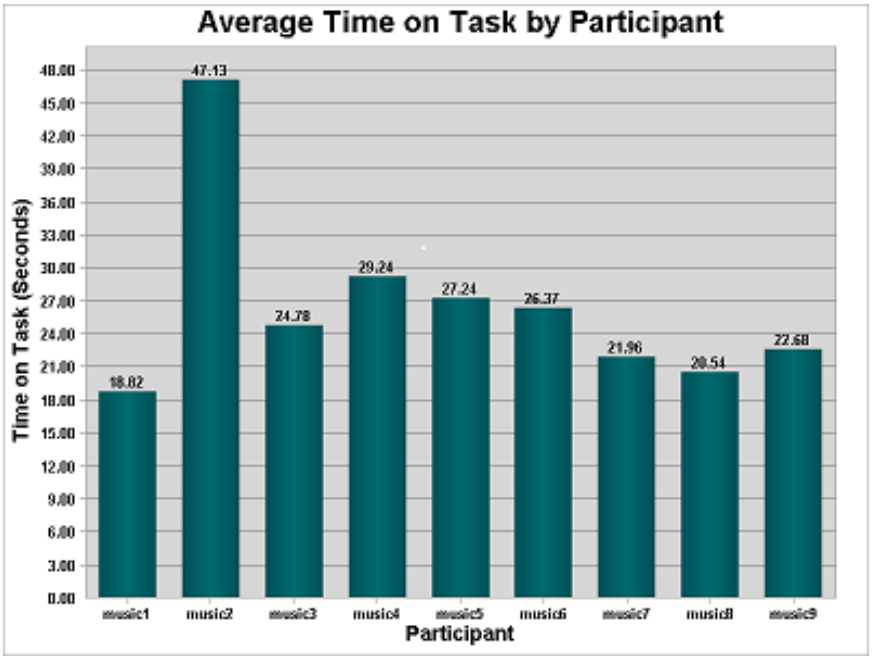


Figure 1

# Results

## Time-on-Task

Times that users took to complete each of the seven tasks were averaged together. Eight of the nine subjects averaged less than thirty seconds on all of the tasks. Only one user (music2) averaged over thirty seconds per task. This average (47.13) was significantly higher than the others (17.89 seconds higher). All of the other eight averages were within ten seconds of one another—the lowest time being 18.82 and the highest being 29.24. Excluding the abnormally high average time of the second participant, the average time each participant spent on each task was 23.95 seconds.

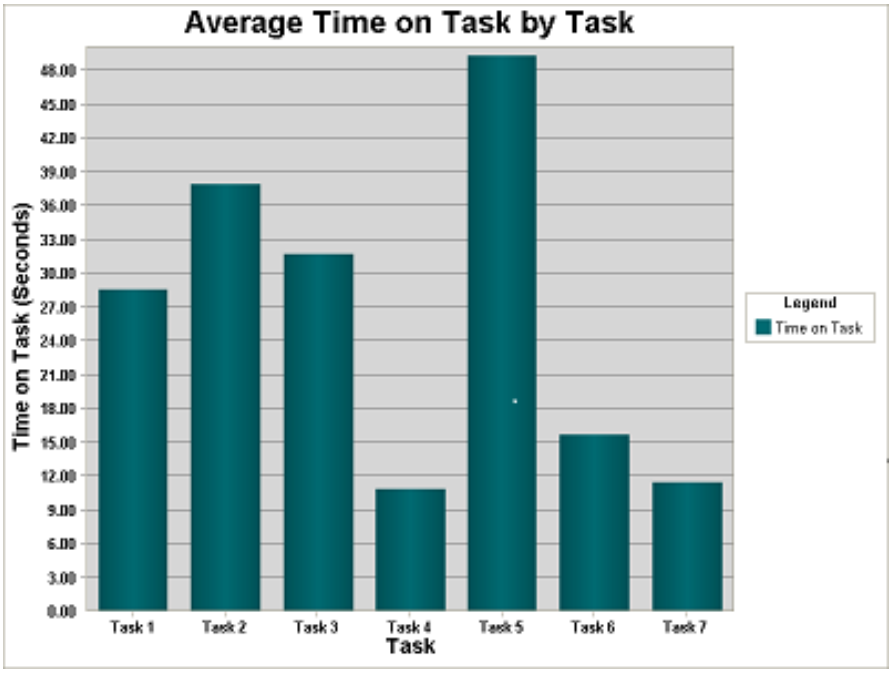


Figure 2

Three tasks took users an average of more than thirty seconds to perform (see Figure 2): finding who to contact for more information about a fine (Task 2), locating

information on CD loan periods (Task 3), and navigating to a resource for listening to classical music online ( Task 5). Finding the hours of the Music Library (Task 4) required the least amount of time on average (approximately 10.5 seconds) followed by finding a link to the catalog (approximately 11 seconds). Task 6, finding a link to the music reference database, Oxford Music Online took the third least amount of time for users to complete, on average (approximately 16 seconds). The fourth and final task that took users an average of less than 30 seconds to complete was Task 1, navigating to the Music Library homepage from the Duke University Libraries homepage.

Task 5, which instructed users to locate an online database for listening to classical music, took the longest time on average (approximately 49 seconds)—over ten seconds more than the next longest task (Task 2) which asked subjects to identify who to contact with questions about a CD fine. Tasks 1 and 3, navigating to the Music Library homepage from the main Duke University Libraries homepage and finding information on compact disc loan periods, respectively, were within ten seconds of Task 2.

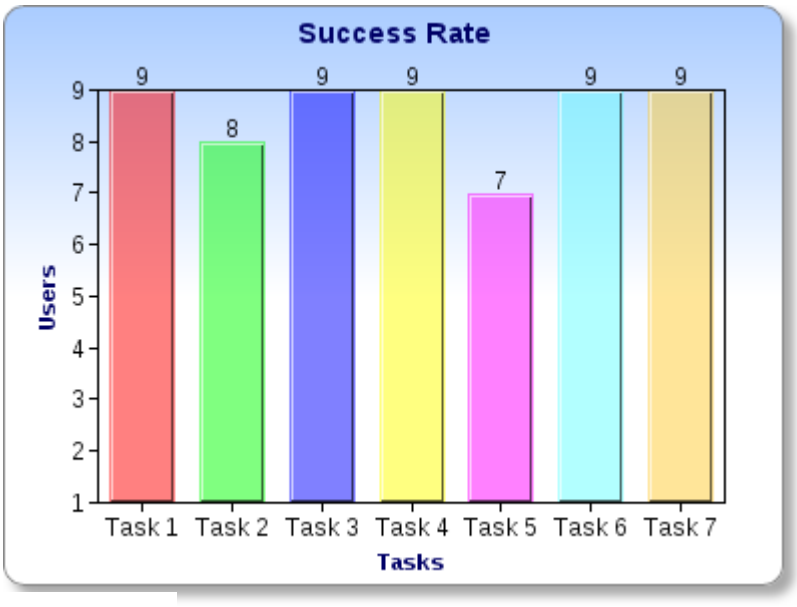


Figure 3

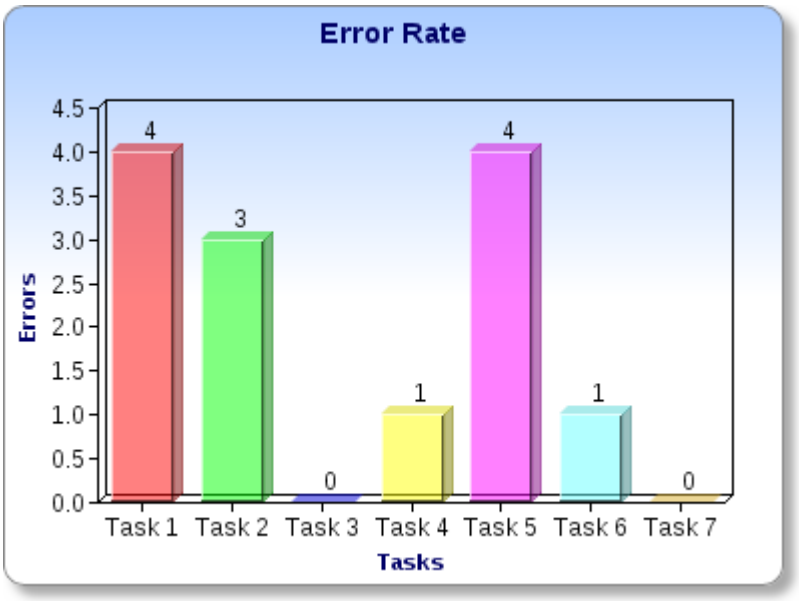


Figure 4

**Success rate**

Figure 3 shows the number of participants that completed each task. Three participants failed to complete a total of three tasks. One subject gave up on locating contact information for inquiring about fines for an overdue compact disc. However, the subject happened to glance upon the phrase "Policies and Fines" while completing another task, and asked if following that link would lead to information on whom to contact regarding fines; indeed it was. Two other users had to be prompted to return to the homepage after trying unsuccessfully to listen to classical music using Oxford Music Online and thus failed to complete Task 5 on their own.

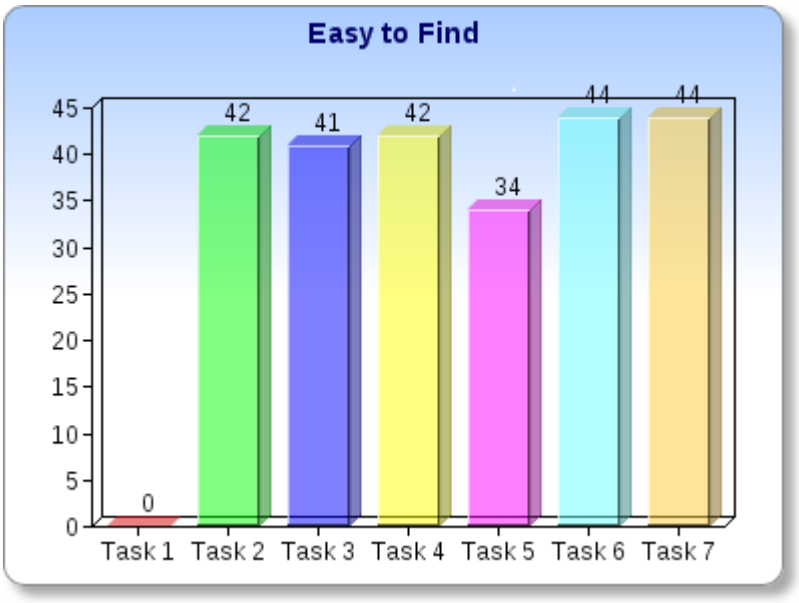


Figure 4

**Deviations From Optimal Path**

As stated above, errors were defined as deviations from optimal navigation paths provided. For Task 1, navigating to the Music Library homepage from the main Duke University Libraries homepage, there was one preferred path. This route required users to scroll down to the bottom of the page and click on a link to the Music Library. Figure 4 shows that four of nine participants did not take this route but found some other way of navigating to the Music Library homepage. Three of these used the search box, and one found the link via the "catalog" page, which does not require one to scroll down. For Task 2 (finding contact information to ask about fines), the optimal path was to click on "Policies and Fines" and find the relevant contact information. There were a total of three errors for this task. In all of these cases, users found someone to contact, but it was not, however, the Music Library staff member in charge of fines. In finding the hours of the Music Library (Task 4), only one deviation from one of the two optimal pathways

occurred. The two optimal pathways were 1) click on the hours link 2) read the hours listed on the sidebar. The subject that deviated clicked on the "Facilities" link rather than performing one of the preferred actions listed above. Task 5, listening to classical music online, tied Task 1 for the highest number of errors (4). In all four of these cases, users attempted to use Oxford Music Online, displayed prominently at the top of the page, rather than scrolling down to "Online Listening" which was located just below the fold. There was only one error for finding Oxford Music Online, which users were asked to do directly after locating the link classical music online. The subject that made this error attempted to use the catalog to locate this database. Only Task 3 (finding information on compact disc loan periods and Task 7 (locating the "Catalog" link) were performed by all subjects without error.

**Users' subjective satisfaction**:

In assessing users' level of agreement or disagreement with the statement "This information was easy to find", values were assigned as follows: strongly agree=5, agree=4, neither agree nor disagree=3, disagree=2, strongly disagree=1. Subjects were asked to rate their level of agreement with this task for all tasks except Task 1, for which these data were not gathered. Thus, for Tasks 2-7, which were performed by nine users each, a total of 45 points was possible. Both Task 6 and 7, locating Oxford Music Online and a link to the catalog, respectively, received a score of 44. For both of these tasks the same user (Music 5), agreed that the information was easy to find. All other respondents strongly agreed that the information was easy to find. Finding someone to ask about a compact disc fine and locating the hours of the Music Library (Tasks 2 and 4,

respectively) both received a score of 42. Three participants agreed rather than strongly agreed that finding someone to contact about compact disc fines was easy to find. One participant agreed rather than strongly agreed that the hours were easy to find, and one user neither agreed nor disagreed that the hours were easy to find. Identifying how long one may checkout a compact disc (Task 3) received a score of 41, with two respondents agreeing and one respondent neither agreeing nor disagreeing that the information was easy to find. All other respondents strongly agreed that the hours were easy to find. Task 5 (navigating to classical audio online) received the lowest score (34). Two respondents strongly agreed that this information was easy to find, five respondents agreed that agreed that the information was easy to find, and two disagreed that the information was easy to find.

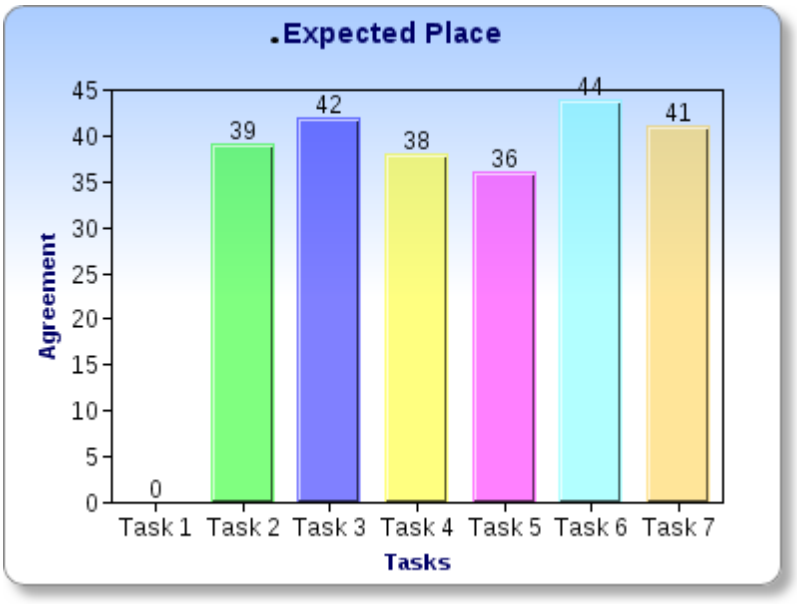


Figure 5

Scores were assigned in the same manner for subjects' level of agreement with the statement, "This information was in a place I expected". Again, these data were not collected for Task 1. Task 2 (finding a contact for compact disc fines) received a score of 39. Four subjects agreed that this information was in an expected place, and one subject neither agreed nor disagreed that the contact information was in an expected place. The other four respondents strongly agreed that the information was in an expected place. Finding compact disc loan information (Task 3) received a score of 42, with one subject agreeing and one subject neither agreeing nor disagreeing that this information was in an expected place. Locating the hours of the Music Library hours received a score of 38. Two users neither agreed nor disagreed that the information was in an expected place, while one disagreed. All others strongly agreed that this information was in an expected place. The lowest score was 38, garnered by Task 5 (locating an online database for online listening). One respondent strongly disagreed that this information was in an expected place. This was the only "strongly disagree" response to either statement read to respondents after completing each task. Another user neither agreed nor disagreed, while three agreed that this information was in an expected place. Three participants strongly agreed that the database for listening to classical music online was in an expected place. Task 6 (locating the reference database, Oxford Music Online) received a score of 44. Only one respondent agreed, rather than strongly agreed, that the link to this resource was in an expected place. Locating a link to the catalog, the final task, received a score of 41. One respondent neither agreed nor disagreed that the link to the catalog was in an expected place, while two agreed, and six strongly agreed.

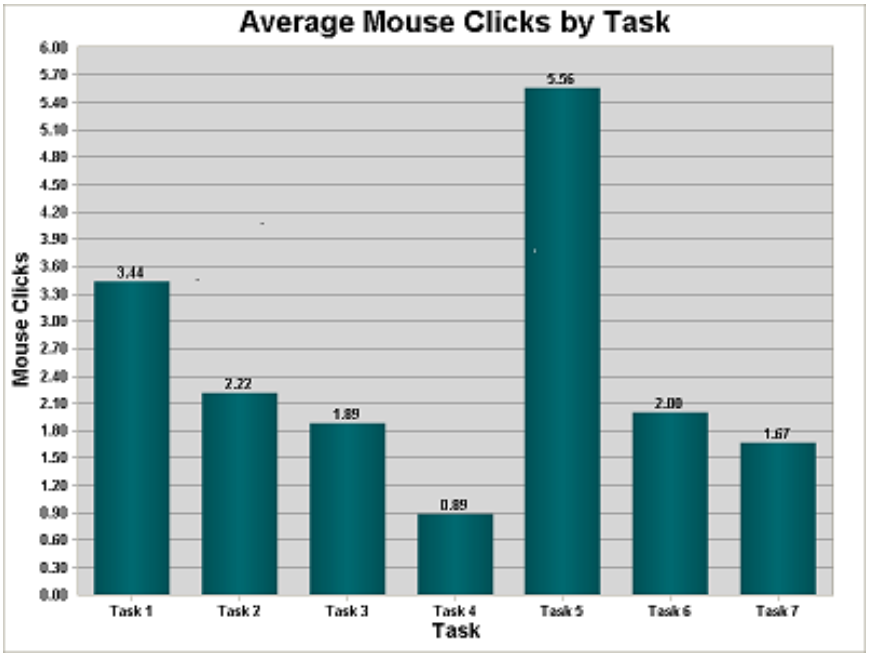


Figure 6

**Mouse Clicks**

Task 5 (finding a resource for listening to classical music online) required the most mouse clicks, an average of 5.56. Task 1 (navigating to the Music Library homepage) from the main Duke Libraries homepage required the second most mouse clicks, on average (3.44). Locating information about fines (Task 2) required the third most clicks, followed closely by Task 6 and Task 3, locating Oxford Music Online and finding loan periods for compact discs, respectively. Task 4 (locating the hours) required the least number of clicks, only .89 clicks on average.

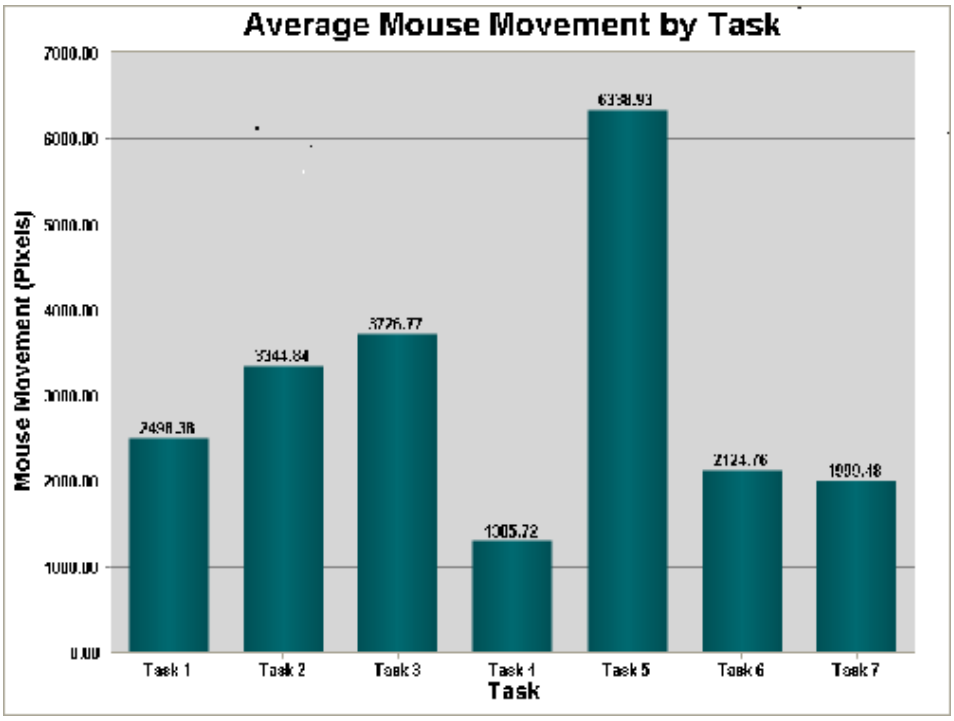


Figure 8

**Mouse Movement**

Finding a resource for listening to classical music online (Task 5) required the highest average mouse movement (over 6000 pixels). Finding information about compact disc loan periods and fines (Tasks 3 and 2, respectively), required significantly less mouse movement, in the mid-three-thousand range, followed by navigating to the Music Library homepage (Task 1). This task along with locating Oxford Music Online (Task 6), finding a link to the catalog (Task 7), and identifying the hours of the Music Library (Task 4) all required less than 3000 pixels of mouse movement on average.

## Comments, responses, and observations

### Finding content below the fold

There were two tasks that required finding content located below the fold, the point where one cannot read content on the bottom part of the page without scrolling down. These tasks were navigating to the Music Library homepage (Task 1) and finding a resource for listening to classical music online (Task 5). Subject four disagreed that the online listening was easy to locate, as there was "scrolling involved". Subject seven also disagreed that online listening was easy to find because it was too far down the page. The only instances where subjects had to be redirected altogether occurred during this task as well (Task 5). The third subject, however, commented that the "first thing I would do would be scroll down". However, the data (e.g. time on task, number of errors) shows that subject three's attitude was an anomaly and that, for the majority of users, finding content was hindered by its being located below the fold.

### Navigation pathways and the amount of text on the homepage

Subjects seven and nine opted to call the phone number provided on the sidebar, rather than attempting to "sift through" the information on the page to find the contact information for the staff member responsible for fines. Similarly, although subject eight initially started out on the optimal navigation pathway by clicking the "Policies and Fines" link, the subject finally decided to navigate back to the Music Library homepage and send an email to the general music library email address provided on the sidebar, rather than reading through the text on the "Policies and Fines" page and locating the

contact information for the correct staff member. Subject seven commented that there were “a lot of links” on the page and that it “feels like you need to read them all to find what you’re looking for”. In these examples and comments, the abundance of text was a barrier to completing the task.

**Overall organization/appearance**

Subjects one, two, and eight commented that there was “not really” anything confusing or difficult about the site. Subject eight, commented that the headings and groupings seemed “reasonable”. Others (subjects five, six and nine) agreed that the headings and groupings made sense. Subject five however stated that having three columns required a lot of “jumping around” and suggested that the headings could be “more linear”. Participant eight thought that the links “could be sorted in a more ordered way” and was unsure whether the “academic” categories would be useful to all users, including researchers from other disciplines. Subject eight also noted that the site seemed “familiar” because of its similarity to other Duke University websites. The common theme that emerged in these comments is the need to visually organize the headings and groupings in a way that is easier to navigate.

Subject four commented that s/he was drawn to the manuscript image on the left hand sidebar and that s/he wished that “it would tell me what it was”. Subject four also liked the variation in color of the sidebar and the “pretty music notes”; “plain text would be boring”, s/he noted. S/he also commented on the image on the right hand side of the page of people studying in the Music Library but was unsure where it was taken; “is there

such a thing as a physical music library at Duke?", s/he commented. Of course, it could be argued that this question was meant to be rhetorical. The picture is a valuable cue that there is indeed a physical music library.

Subject eight compared the site to iTunes and commented that a visual discovery tool similar to the one for browsing through albums on iTunes would be useful. This participant also suggested that "mini-visuals" might be used as a means of providing users with a visual method of sorting through the information on the page and that capabilities for searching by genres, such as classical, or jazz be expanded. These comments indicating a preference for visual cues and means of organization are consistent with the comments discussed above indicating that the amount of text on the homepage is rather cumbersome and a that there is a need for an alternative means of spatial organization of content.

**Usefulness of content**

The highest number of participants (four) stated that online listening was among the most useful things on the homepage (subjects one, three, five, & six). Three users (seven, nine, and four) stated that the search bar was among the most useful things on the page. Two subjects (seven and nine) stated that the contact information was one of the most useful items on the page. More specifically, subject eight liked that the contact information was in a separate location in the sidebar. Two users also said that music databases were among the most useful things on the site (subject one & four). For each of the following items, one (unique) user ranked it among the most useful items on the

page: Policies, Fines, Loan Periods, Music Research Guide, Digital Scores, Hours, library location, Useful Links, and New at the Music Library. Any redesign of the homepage should take these findings into account and organize resources accordingly. Of course, one should keep in mind that only one music major took part in this study and that regular users of the site (e.g. music majors and faculty) might have different needs than the users represented in this sample. For example, the lone music major in the sample indicated that s/he judged digital scores (along with online listening) to be among the most useful things on the site. Future studies might do well to focus on the needs of these core users.

## Discussion

Users had the most trouble finding a resource for listening to classical music online (Task 5): more users failed to complete the task than any other task; this task tied with Task 1 (navigating to the Music Library page) for the most errors; users spent the most time on this task; this task required the most clicks and mouse movement; and users' expressed the least subjective satisfaction with their ability to complete the task.

Locating contact information for inquiring about compact disc fines (Task 2), required the second most amount of time of any task and elicited the second highest number of errors, and the second highest number of failures. This task ranked third in average mouse movement and average number of clicks.

Navigating to the Music Library page (Task 1) was also problematic for users. Out of nine subjects, four sought an alternative to scrolling down to the link at the bottom

of the page. In terms of mouse clicks, this task required the second most number of clicks, on average, after finding classical music online. Mouse movement was also relatively high, fourth highest overall.

Although finding loan periods for compact discs (Task 3) required the second highest mouse movement on average, the third highest amount of time on average, there was a 100% success rate and zero errors. Users' gave it the second lowest score overall in terms of agreeing that the loan periods were easy to find. Interestingly, it received the second highest level of agreement with the statement that it was in a place the information was easy to find.

Locating the link Oxford Music Online (Task 6), had a one hundred percent success rate an only one error. This task required the third lowest number of mouse-clicks and mouse movement. This task received the highest level of agreement from users that the link was in an expected place and also received, along with Task 7, the highest level of agreement that it was easy to find. This task immediately followed the other task (Task 5) that prompted subjects to look for the phrase "music online", and all four of the errors committed on that task consisted of participants attempting to use the Oxford Music Online link rather than the link to classical music under "Online Listening". Thus, the high success rate, ease of completion, and high subjective satisfaction may be due in part to users having already located this resource on the preceding task.

Finding the online catalog was fairly unproblematic for users (Task 7). This task required the second least amount of time, was completed by all subjects, and elicited no errors. However, this task received only the third highest level of agreement from users that the link to the catalog was in an expected place, and required an average of 1.67 clicks. As the primary means of locating materials in a library is through the catalog, users should not need more than one click to locate a catalog search box which they are used to seeing on the home page of library websites.

Finding the hours of the Music Library required the least time, mouse movement, and mouse clicks. All subjects completed this task.

**Recommendations**

- Given the difficulty that subjects had navigating to the Music Library homepage from the main libraries homepage and the fact that all subjects had never used the site before, including the only Music major, it is recommended that a link to the Music Library, and other campus Libraries be featured more prominently on the Duke University Libraries homepage. Specifically, the link should be above the fold and in larger text than the current link. Given Dougan & Fulton's (2009) finding that users preferred to make more clicks using well-designed categories over text-heavy pages that require fewer clicks, it is recommended that the links to these libraries be placed on another page or in a dropdown menu.

- As some users had difficulty finding contact information for inquiring about fines, it is suggested that this information be moved to the top of the Fines & Policies page and that the amount of text on the page be reduced.
- In light of users' comments that links to online listening were among the most useful resources on the site and that finding these resources required the most time and elicited the most errors, it is recommended that links to online listening be moved above the fold, so that they are more easily located.
- To cut down on the amount of text on the Music Library homepage, it is recommended that the Useful Links category be moved to its own page and be linked to by a prominently featured link on the homepage. The suggestion that this resource be featured prominently is supported by users' comments that they believed these resources to be among the most useful.
- Currently, the main Duke University Libraries website is set as the default homepage when one opens a browser in the physical Music Library. Bearing in mind that the lone Music major in our sample had never used the Music Library website, it is recommended that the default page be set to the Music Library website so as to increase visibility and raise awareness.
- Based on user comments, it is suggested that alternative methods of categorization and spatial organization on the page be explored. Additionally, incorporating some system of visual cues should be investigated as a means of making pages easier to scan.

## Conclusion

The usability study of the Music Library website revealed some significant design issues that need to be addressed, as stated above. Analysis of the data has led ECL WAG to: 1)make providing access to online scores a priority by featuring these resources more prominently; 2) continue to provide links to other online resources but move them to a separate page; 3) reduce the amount of text on the homepage and other pages; 4) explore alternative means of navigation; 5) increase visibility of the site and awareness of its existence. As the Duke University website is typical of academic library websites, in general, and Music Library websites, in particular, we hope that our findings will be of use to other libraries seeking to improve their sites.

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**Appendix A**

# Duke University Music Library Website Usability Video Release Form

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Thank you for participating in this usability interview for the Music Library web site . We will be recording this session to allow project staff who cannot be present to benefit from your feedback. Please read the statement below and sign where indicated.

Video recordings made during this study will be used for research and development. Therefore, I understand that my work during the evaluation will be recorded and viewed by the staff of Duke University Libraries. I further understand that Duke University Libraries may wish to use segments of these recordings to illustrate presentations offered to library staff for the improvement of web services.

I give my consent to the researchers to use my recorded image and voice for these purposes, with the provision that my name will not be associated with the recording and that these recordings will not be released to any broadcast or publication media.

I freely and voluntarily consent to participate in the Duke Music Library Website Usability Study. I understand that my participation in this evaluation is completely voluntary. I also understand that I may withdraw my consent and discontinue my participation at any time without penalty or prejudice to me.

***I have read and understood the foregoing and understand that I may receive a copy of this form, upon request, on the day of the study.***

Print Name: _____

Sign Name: _____

Date: _____

## Appendix B

### Recruiting Script

Hello, my name is Marshall Stroscio, and I'm a graduate student at the University of North Carolina at Chapel Hill. We're doing some testing on the Duke University Music Library Website and I was wondering if you could spare about 15 – 25 minutes to participate in a research study. We are asking participants to perform seven tasks on our website and to answer several questions about the site. I will also be writing a paper to fulfill a requirement for my Master's degree in Library Science at the University of North Carolina at Chapel Hill. However, no identifying information will be included in the paper. We are offering your choice of several candy bars to say thank you for your time and effort. Do you have some time to participate?

## Appendix C

### Observation Script

Hi, my name is _Marshall Stroscio and I'm a Master's student at UNC Chapel Hill_____ . I'm going to be reading from my script to ensure that we uniformly administer this research study for all our subjects.

Thanks for agreeing to take part. During this session, you will be asked questions about our web site. There are no right or wrong answers. Please feel free to stop me at any time for a question or concern. The Duke University Libraries appreciate your assistance in helping us improve our web presence.

We are using software called Morae to record this session. All notes, screen capture, and recording are for library staff to review the session so that I don't have to write everything down and will not be released to the general public; however, we might share our findings with the staff of Duke University Libraries for the purpose of improving web services.

What's really most helpful is for to you share your thoughts and observations with me as you are completing the tasks, so please try to think out loud as much as you can.

Before we start the test, there's some paperwork I'm going to ask you to fill out. **[Hand subject 2 copies of consent form]** This is a consent form stating the information will be kept confidential and that your name will not be associated with the recording. We have 2 copies of the form here—one for you to keep and one for our records. I'll give you some time to read and sign it. If you have any questions, please let me know. **[Take signed copy and leave unsigned copy for them]**

Now that we've gotten the paperwork out of the way, do you have any questions before we start? **[Pause for questions]** I am now going to start recording our session.

**[Start recording the test by clicking on the Morae red button]**

I am going to start by asking you some questions about yourself and your use of library web sites

- What is your affiliation with Duke? Undergraduate, Graduate student, Faculty or Staff Member?
- Have you used the Music/Lilly Library website?
- If yes, do you use the site rarely, sometimes or often?

- Using the Libraries' main home page, how would find the Lilly/Music page?

**Tasks for Music Webpage:**

(Reset browser after each task)

- You checked your online library account and you have a CD fine. You have questions about the fine. Who would you contact for more information?
    - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
    - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
- How long can you check out a CD?
    - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
    - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
- What are the hours for the Music library?
    - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
    - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
- Your professor has asked you to listen to classical music online. Find a useful link to online music.
    - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
    - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
- Your professor has asked you to start your research by using Oxford Music Online. Find this resource.

  - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
  - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
- You need to look up a title of a book. Can you find the link to the catalog?
  - **The information was easy to find**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree
  - **The information was in a place you expected**. Ask the participant to rank the statement: Strongly disagree; Disagree; Neither agree nor disagree; Agree; Strongly agree

**Closing Questions:**

- Now that you've had a chance to look at the webpages, what's not on the page that you would expect to be here?
- What are the 2 or 3 most useful things on the site? In general, what do you like about the site?
- Is there anything about our site that you find confusing and/or difficult?
- Do the headings and groupings of information make sense to you? If not, how would you change them?
- Are there kinds of information that you don't see on our site now that you would like to see in the future?

## Appendix D

### Observation Guide

The study will be implemented by investigators working in pairs. One investigator will serve as a moderator. The other investigator will serve as a note taker and observer.

The moderator will:

- Ensure the comfort and safety of study subjects
- Use the interview script to
    - explain the task
    - ask background and follow-up questions
    - guide subjects
- Refrain from prompting or interrupting the participant unless it becomes clear that the subject does not understand the task, in which case the moderator will read the task again to clarify the

The note taker/observer will:

- Focus on observation and listening
- Write down any insights or comments provided by subjects

## Appendix E

**University of North Carolina at Chapel Hill Consent to Participate in a Research Study Adult Participants**
affiliates of Duke University

**Consent Form Version Date:** 06/14/2012

**IRB Study #** 12-0787

**Title of Study**: Duke Music Library Website Usability Study

**Principal Investigator**: Marshall Stroscio

**Principal Investigator Department**: School of Info & Libr Science

**Principal Investigator Phone number**: 9193818790

**Principal Investigator Email Address**: shalamar@live.unc.edu

**Co-Investigators:** Laura Williams, Kelley Lawton, Carol Terry, Lauren Crowell

**Faculty Advisor**: Rob Capra

**Faculty Advisor Contact Information**: rcapra@email.unc.edu, 919 962-9978

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**What are some general things you should know about research studies?**

You are being asked to take part in a research study. To join the study is voluntary.

You may refuse to join, or you may withdraw your consent to be in the study, for any reason,

without penalty.

Research studies are designed to obtain new knowledge. This new information

may help people in the future. You may not receive any direct benefit from being in the research study. There also may be risks to being in research studies.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

You will be given a copy of this consent form. You should ask the researchers named above, or staff members who may assist them, any questions you have about this study at any time.

**What is the purpose of this study?**

The purpose of this research study is to assess the functionality and ease of use of the Duke University Music Library's website.

You are being asked to be in the study because you are affiliated with Duke University.

**Are there any reasons you should not be in this study?**

You should not be in this study if you are not over the age of 18.

**How many people will take part in this study?**

A total of approximately 15 people will take part in this study.

**How long will your part in this study last?**

This study will take no more than twenty-five minutes.

**What will happen if you take part in the study?**

- ***Overall design***:

- You will be asked to confirm your affiliation with Duke University.
- Your voice and image will be recorded.
- You will be asked about your use of the Duke University Music Library website.
- You will be asked to complete a set of tasks.
- After each task, you will be asked a short set of questions about that task.
- After completing all the tasks, you will be asked some general questions about the

  website and the tasks you were asked to perform.
- You are not required to answer any of the questions or complete any of the tasks.
- If you do not complete all tasks and questions, none of the data gathered as a result of your participation will be used.

**What are the possible benefits from being in this study?**

Research is designed to benefit society by gaining new knowledge. You will not benefit personally from being in this research study.

**What are the possible risks or discomforts involved from being in this study?**

There are no right or wrong answers. Your performance and responses are not being judged, rather the functionality of the site is being evaluated. There is no need for any stress, embarrassment, or any other discomfort.

**How will your privacy be protected?**

- Your name will not be linked to your image or voice.
- The video will be stored on the computer used for the testing and may be also be stored on other equipment owned by Duke University or the investigators listed above.

- Any identifying data will only be accessed by the investigators listed above for the purposes stated in this form.

- The consent form is the only part of this study where your name will be used. You will beidentified by an ID number that will be incorporated into the name of the file that contains your data.

Participants will not be identified in any report or publication about this study. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies (for example, the FDA) for purposes such as quality control or safety.

- The recordings and other data collected in this study will be deleted. Prior to deletion, the data may be used by Duke University for the improvement of their websites and so that Duke University staff who are not present can benefit from your work and feedback.

Check the line that best matches your choice:

_____OK to record me during the study

_____not OK to record me during the study

**What if you want to stop before your part in the study is complete?**

You can withdraw from this study at any time, without penalty. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

**Will you receive anything for being in this study?**

You will be receiving a candy bar for completing this study.

**Will it cost you anything to be in this study?**

It will not cost you anything to be in this study.

**What if you have questions about this study?**

You have the right to ask, and have answered, any questions you may have about this research. If you have questions about the study (including payments), complaints, or concerns, you should contact the researchers listed on the first page of this form.

**What if you have questions about your rights as a research participant?**

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, or if you would like to obtain information or offer input, you may contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.

**Participant's Agreement**:

Thank you for participating in this usability study for the Duke Music Library web site . We will be recording this session to allow project staff who cannot be present to benefit from your feedback. Please read the statement below and sign where indicated.

Video recordings made during this study will be used for research and development. Therefore, Iunderstand that my work during the evaluation will be recorded and viewed by the staff of Duke University Libraries.

I give my consent to the researchers to use my recorded image and voice for these purposes, with the provision that my name will not be associated with the recording and that these recordings will not be released to any broadcast or publication media.

I freely and voluntarily consent to participate in the Duke University Music Library Website Usability Study. I understand that my participation in this evaluation is completely voluntary. I also understand that I may withdraw my consent and discontinue myparticipation at any time without penalty or prejudice to me.

I have read the information provided above. I have asked all the questions I have at this time. I voluntarily agree to participate in this research study.

I have read and understood the foregoing and understand that I may receive a copy of this form, upon request on the day of the study.

_____ _____

Signature of Research Participant Date

_____

Printed Name of Research Participant

_____ _____

Signature of Research Team Member Obtaining Consent Date

_____

Printed Name of Research Team Member Obtaining Consent